

Title:	Opinion and Instruction Document Mitigating the risks of: uncontained in-flight fire; corrosion and fatigue in aircraft; and runway excursions.	
Package Number	0005	
Headline Purpose:	• To prevent structural failure in aircraft due to corrosion and fatigue. • To mitigate the risk of injuries or fatalities caused by uncontained in-flight fire. • To mitigate the risk of runway excursion during landing.	
Proposed action:	To amend Annex I (Part-26) to Commission Regulation (EU) 2015/640 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 (" UK Reg (EU) No. 2015/640 ") and M.A.302(d) of Annex I (Part-M) Commission Regulation (EU) 1321/2014 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 (" UK Reg (EU) No. 1321/2014 ").	

Objective

In the CAA's opinion, changes to [UK Reg \(EU\) No. 2015/640](#) and [UK Reg \(EU\) No. 1321/2014](#) are needed to ensure the safe operation of ageing aircraft throughout their operational life, and to address the risks associated with in-flight fire and runway excursions during landing. Through these changes, the CAA's objectives are to:

- prevent catastrophic failures due to fatigue and corrosion;
- mitigate against the risk of injuries or fatalities in the event of an in-flight fire in the cargo or baggage compartment; and
- mitigate against the risk of runway excursions during landing.

In addition, it is the CAA's opinion that further amendments to the law are required to:

- Defer the date by which by which additional airworthiness requirements for the dynamic conditions of passenger and cabin crew seats are applied to newly produced large aeroplanes of a design which has already been certified by EASA. This is to avoid imposing an additional burden arising from the need to requalify the seats for aeroplanes whose production has been delayed by lockdown; and
- Correct minor drafting deficiencies in point 26.334 of Annex I of [UK Reg \(EU\) No. 2015/640](#).

Background

Fatigue and corrosion

Service experience has shown that there is a need continually to update industry knowledge about the structural integrity of ageing aircraft. Therefore, it is the CAA's opinion that new requirements for design approval holders and operators to obtain and maintain knowledge about the consequences of age (based on real-time operational experience) and the use of modern analytical tools and testing to detect ageing factors should be introduced.

By the changes which in the CAA's opinion should be introduced, design approval holders will be required to develop a comprehensive continuing structural integrity programme for aircraft types and to evaluate existing changes and repair designs for damage tolerance. At the same time, operators will be required to incorporate into their maintenance programme those data whilst addressing the adverse effects of changes and repairs on each airframe and its associated maintenance requirements.

In-flight fire in the cargo or baggage compartment

In September 2007, EASA introduced new design standards eliminating Class D cargo and baggage compartments from the certification specifications for large aeroplanes. A Class D cargo or baggage compartment is one in which:

- a) a fire occurring in it will be completely confined without endangering the safety of the aeroplane or the occupants;
- b) there are means of excluding hazardous quantities of smoke, flames, or other noxious gases from any compartment occupied by the crew or passengers;
- c) ventilation and draughts are controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits; and
- d) consideration is given to the effect of heat within the compartment on adjacent critical parts of the aeroplane.

Those standards were aimed at mitigating the risk of injuries or fatalities in the event of an in-flight fire in the cargo or baggage compartment, but they only applied to large aeroplanes certified on the basis of requests made after September 2007. Class D cargo compartments are still to be found under the passenger cabin floor on a significant number of transport aircraft. However, it must be appreciated that certain dangerous goods are themselves oxygen producers. Therefore, it cannot be assumed that a fire in a Class D cargo compartment will necessarily self-extinguish.

The risk of uncontrollable fires in this type of compartment is considered high, in particular considering that the carriage of lithium batteries in cargo or baggage compartments has increased over recent years, together with the identified risk of thermal runaways and the subsequent fires related to those batteries.

The CAA now considers that the same design standards should apply to all in-service large aeroplanes, whenever they were certified. In the interests of safety, therefore, in the CAA's opinion all Class D cargo or baggage compartments must now be required to comply with the certification specifications applicable to:

- a) A Class C compartment where the aeroplane is used for the transport of passengers; or
- b) A Class C or a Class E compartment where the aeroplane is used for the transport of cargo only.

Runway Excursions

For the last few decades, runway excursions have been contributors to accidents worldwide and a significant risk to aviation safety. The [EASA Annual Safety Review 2018](#) identified runway excursions as one of the two highest key risk areas. Furthermore, runway excursions accounted for 30% of the non-fatal accidents over the same period and for the same population. It has also been identified by the CAA as a significant risk to aviation safety. The number of runway excursions during landings has increased in line with the growth in traffic. As aviation traffic is expected to continue to grow worldwide the number of runway excursions can also be expected to increase further if no action is taken.

In January 2020 EASA introduced new design standards for the installation of systems supporting flight crews in their decision-making during approach and landing. Those standards are aimed at reducing the risk of runway excursions during landing. It is the CAA's opinion, having due regard to the nature and risk of operations with large aeroplanes, that similar standards to those introduced by EASA should apply to all in-service large aeroplanes, and the CAA therefore intends to introduce such measures.

Commission Implementing Regulation (EU) 2020/1159 of 5 August 2020 ("[CIR \(EU\) 2020/1159](#)") amended Commission Regulation (EU) 2015/640 of 23 April 2015 '(Additional airworthiness specifications for operations' (Part-26)) ("[CR \(EU\) 2015/640](#)") as it was in force in Europe in relation to the matters set out above. These amendments were not in force at the end of the Transition period and accordingly no such amendments were made to [UK Reg \(EU\) No. 2015/640](#).

In order to ensure that those data, procedures, instructions and manuals produced on the basis of the new requirements were also used when maintaining large aeroplanes, [CIR \(EU\) 2020/1159](#) also amended point M.A.302 (d) of Annex I to Commission Regulation (EU) No. 1321/2014 ("[CR \(EU\) No. 1321/2014](#)") to create a link with the requirements introduced into Part-26 of Annex I to [CR \(EU\)](#)